

In the Specification

(1) Please replace the paragraph at lines 26-28, page 3 of the specification as filed with the following paragraph:

A further object of the present invention is to provide a small synthetic nucleic acid sequence
GGGA GGGC CCTCTCG GTAGA ACACCA TGACGGA
CTATCCCACGAACGCTCACGGGGCCCTCC (SEQ ID No. 1).

A mark-up version of the replacement paragraph on Page 3 lines 26-28 is shown below:

A further object of the present invention is to provide a small synthetic ~~ribonucleic~~ nucleic acid sequence GGGA GGGC CCTCTCG GTAGA ACACCA TGACGGA
CTATCCCACGAACGCTCACGGGGCCCTCC (SEQ ID No. 1).

(2) Please replace the paragraph at line 17, page 5 to line 2, page 6 of the specification as filed with the following paragraph:

(A) Proposed secondary structure of the HCV Ires RNA spanning nucleotides 40-372 of the 5'UTR of the viral RNA (SEQ ID No. 2). The domains that were PCR amplified and cloned to generate small RNAs are delineated. (B) 100-fold and 200-fold molar excess of in vitro transcribed SL II, III and IV RNAs were added to in vitro translation reactions of HCV bicistronic RNA. 5 .mu.l of the translation reactions was resolved on SDS-12.5% PAGE and exposed for phosphorimaging. The fluc and Rluc protein products are indicated by arrows. (C) The percent Fluc activity representing the efficiency of HCV IRES-mediated translation from a HCV bicistronic template in presence of six increasing concentrations of SL II, III and IV RNAs. The Fluc activity at each concentration is represented as a percentage of the control reaction (expressed as 100%). (D) The percent Rluc activity representing the efficiency of cap-dependent translation from the same set of experiments were plotted. The Rluc activity at each concentration is represented as a percentage of the control reaction. The translation efficiency was not reduced to below 50% by either SL III or SL II.

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(A) Proposed secondary structure of the HCV Ires RNA spanning nucleotides 40-372 of the 5'UTR of the viral RNA (SEQ ID No. 2). The domains that were PCR amplified and cloned to generate small RNAs are delineated. (B) 100-fold and 200-fold molar excess of in vitro transcribed SL II, III and IV RNAs were added to in vitro translation reactions of HCV bicistronic RNA. 5 .mu.l of the translation reactions was resolved on SDS-12.5% PAGE and exposed for phosphorimaging. The Fluc and Rluc protein products are indicated by arrows. (C) The percent Fluc activity representing the efficiency of HCV IRES-mediated translation from a HCV bicistronic template in presence of six increasing concentrations of SL II, III and IV RNAs. The Fluc activity at each concentration is represented as a percentage of the control reaction (expressed as 100%). (D) The percent Rluc activity representing the efficiency of cap-dependent translation from the same set of experiments were plotted. The Rluc activity at each concentration is represented as a percentage of the control reaction. The translation efficiency was not reduced to below 50% by either SL III or SL II.

(3) Please replace the paragraph at line 24, page 6 to line 6, page 7 with the following paragraph:

(A) Proposed secondary structure of HCV IRES (internal ribosome entry site) domain III (121-315 nt) (SEQ ID No. 3), delineating the SL structures, which were generated by oligonucleotide-driven transcription. (B) Schematic representation of the process of oligonucleotide-driven transcription of the HCV IRES SL RNAs using synthetic oligonucleotide templates (C) The percent Fluc activity representing the efficiency of HCV IRES-mediated translation from a HCV bicistronic template in presence of five increasing concentrations of SL III a+c, b, d and e+f RNAs was plotted. Luciferase activity in control reactions is expressed as 100%. (D) The percent Rluc activity representing the efficiency of cap-dependent translation from the same set of experiments was plotted. The reporter gene activity at each concentration is represented as a percentage of the control reaction.

A mark-up version of the replacement paragraph is shown below:

(A) Proposed secondary structure of HCV IRES (internal ribosome entry site) domain III (121-315 nt) (SEQ ID No. 3), delineating the SL structures, which were generated by oligonucleotide-driven transcription. (B) Schematic representation of the process of oligonucleotide-driven transcription of the HCV IRES SL RNAs using synthetic oligonucleotide templates (C) The percent Fluc activity representing the efficiency of HCV IRES-mediated translation from a HCV bicistronic template in presence of five increasing concentrations of SL III a+c, b, d and e+f RNAs was plotted. Luciferase activity in control reactions is expressed as 100%. (D) The percent Rluc activity representing the efficiency of cap-dependent translation from the same set of experiments was plotted. The reporter gene activity at each concentration is represented as a percentage of the control reaction.

(4) Please replace the paragraphs at line 16, page 7 to line 2, page 8 with the following paragraph:

FIG. 6: SL III e+f (A297G) RNA fails to bind to S5 ribosomal protein and does not inhibit HCV IRES-mediated translation.

(A) Representation of the SL III e+f RNA (SEQ ID No. 4) showing the mutation of A297 to G (SEQ ID No. 5). (B) ³²P-labeled RNAs corresponding to SL III e+f and SL III e+f (A297G) were UV-crosslinked to HeLa S10 extract and digested with RNase A. The nucleoprotein complexes were resolved by SDS-15% PAGE and the position of p25 is indicated. (C) The same RNAs were UV-crosslinked to purified S5 ribosomal protein and the nucleoprotein complexes were resolved by SDS-15% PAGE. (D) 100-fold and 200-fold molar excess of in vitro transcribed SL III e+f (A297G) RNA was added to in vitro translation reactions of HCV bicistronic RNA and luciferase activity was assayed. The black bars represent Fluc activity (HCV IRES-mediated translation) whereas the gray bars represent Rluc activity (Cap-dependent translation). Luciferase activity in control reactions is expressed as 100%. Combined data from three independent experiments is represented.

A mark-up version of the replacement paragraph is shown below:

FIG. 6: SL III e+f (A297G) (A297GF) RNA fails to bind to S5 ribosomal protein and does not inhibit HCV IRES-mediated translation.

~~In the results FIG. 5A and B seem to indicate binding of HeLa lysate and purified S5 protein with all the small RNAs. Please check.~~

(A) Representation of the SL III e+f RNA (SEQ ID No. 4) showing the mutation of A297 to G (SEQ ID No. 5). (B) ³²P-labeled RNAs corresponding to SL III e+f and SL III e+f (A297G) were UV-crosslinked to HeLa S10 extract and digested with RNase A. The nucleoprotein complexes were resolved by SDS-15% PAGE and the position of p25 is indicated. (C) The same RNAs were UV-crosslinked to purified S5 ribosomal protein and the nucleoprotein complexes were resolved by SDS-15% PAGE. (D) 100-fold and 200-fold molar excess of in vitro transcribed SL III e+f (A297G) RNA was added to in vitro translation reactions of HCV bicistronic RNA and luciferase activity was assayed. The black bars represent Fluc activity (HCV IRES-mediated translation) whereas the gray bars represent Rluc activity (Cap-dependent translation). Luciferase activity in control reactions is expressed as 100%. Combined data from three independent experiments is represented.